

What is claimed is:

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1. A method of forming a natural foot orthosis for providing support for a lower extremity, comprising the steps of:  
5 forming a positive mold of said lower extremity;  
positioning a thermoformable plastic material around predetermined locations on said positive mold for providing increased support for the natural foot orthosis at said predetermined locations;  
10 wrapping a thermoformable plastic sheet around said positive mold and said thermoformable plastic material; and  
vacuum sealing said thermoformable plastic sheet around said positive mold so that said thermoformable plastic sheet and said thermoformable plastic material combine together.
2. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 1, wherein said 15 thermoformable plastic material and said thermoformable plastic sheet are formed from a co-polymer having a ratio of approximately 90-10 polypropylene to polyethylene.
3. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 1, wherein said 20 thermoformable plastic material and said thermoformable plastic sheet are

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formed from a co-polymer having a ratio of approximately 93-7 polypropylene to polyethylene.

4. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 1, further including the step of modifying said positive mold of the lower extremity at predetermined locations on said positive mold to provide increased support of the lower extremity at said predetermined locations, wherein said positive mold is modified prior to the step of positioning said thermoformable plastic material around said positive mold.

10 4.5. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 4, wherein said positive cast is modified by adding approximately 3/16" to the build-up of said positive cast over a medial malleoli section of the positive mold to assist in controlling drop foot.

15 6. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 4, wherein said positive cast is modified by removing portions of said positive cast in three areas in order to create three pressure points acting on the lower extremity.

20 7. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 6, wherein said portions of

positive cast which are removed are at a point below the medial malleoli, at a point approximately 2" above the lateral malleoli and approximately 3" below the fibula head anterior to within approximately 1" of the tibia crest and posterior to the midline, and at a point approximately 1.5" distal to the fibula head approximately 2" wide anterior to within approximately 1" of tibia crest posterior to midline.

8. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 6, wherein said portions of positive cast which are removed are at a point below the lateral malleoli, at a point approximately 2" above the medial malleoli and approximately 3" below the fibula head anterior to within approximately 1" of the tibia crest and posterior to the midline, and at a point approximately 1.5" distal to the fibula head level approximately 2" wide anterior to within approximately 1" of tibia crest posterior to midline.

15 9. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 1, wherein said thermoformable plastic material is a strip of co-polymer approximately 3/16 inch thick, approximately 24 inches long, and approximately 1-1/4 wide.

20 10. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 5, wherein said thermoformable plastic material is a strip of copolymer including a distal end,

wherein said distal end of said strip is centered on a longitudinal arch on said positive mold and said strip is extended below the malleoli posterior above tendon and curved centered proximal over an edge of said positive mold.

11. The method of forming a natural foot orthosis for providing  
5 support for a lower extremity as defined in claim 7, wherein said thermoformable plastic material is a strip of copolymer including a distal end, wherein said distal end of said strip is centered on a longitudinal arch on said positive mold and said strip is extended below the malleoli posterior above tendon and further extended past proximal mid line lateral to within  
10 approximately 1 inch of tibia crest and then curved upward with medial centering in medial proximal calf band concavity.

12. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 8, wherein said thermoformable plastic material is a strip of copolymer including a distal end, 15 wherein said distal end of said strip is centered on a longitudinal arch on said positive mold and said strip is extended below the malleoli posterior above tendon and further extended proximal to mid line medial to within approximately 1 inch of tibia crest and then curved upward with lateral centering in lateral calf band concavity.

20 13. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 1, further comprising the

steps of cooling said vacuum sealed orthosis and trimming said orthosis to a desired shape.

14. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 9, further comprising the  
5 step of trimming said vacuum sealed orthosis approximately 3/8 inch along the length of both sides of said thermoformable copolymer strip.

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*B* 15. A natural foot orthosis for providing support for a lower extremity, comprising:

10 a rigid support structure for holding and supporting the lower extremity;

said support structure being formed from a thermoformable plastic material;

15 wherein said support structure is reinforced in predetermined areas with additional thermoformable plastic material to provide additional support for the natural foot orthosis.

16. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein said additional thermoformable plastic material is integrally formed with said thermoformable plastic material to form said support structure.

17. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein said thermoformable plastic material is formed from a co-polymer material having a ratio of approximately 90-10 polypropylene to polyethylene.

5 18. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein said thermoformable plastic material is formed from a co-polymer material having a ratio of approximately 93-7 polypropylene to polyethylene.

10 19. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein said support structure provides three pressure points against the lower extremity.

20. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein two of said three pressure points are medial and one of said pressure points is lateral.

15 21. The natural foot orthosis for providing support for a lower extremity as defined in claim 20, wherein said two medial pressure points are at a point below the medial malleoli and at a point approximately 1.5" distal to the fibula head approximately 2" wide anterior to within approximately 1" of tibia crest posterior to midline, and said lateral pressure point is at a point approximately 2" above the lateral malleoli and approximately 3" below the

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fibula head anterior to within approximately 1" of the tibia crest and posterior to the midline.

22. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein two of said three pressure points are 5 lateral and one of said pressure points is medial.

23. The natural foot orthosis for providing support for a lower extremity as defined in claim 22, wherein said two lateral pressure points are at a point below the lateral malleoli and at a point approximately 1.5" distal to the fibula head level approximately 2" wide anterior to within 10 approximately 1" of tibia crest posterior to midline, and said medial pressure point is at a point approximately 2" above the medial malleoli and approximately 3" below the fibula head anterior to within approximately 1" of the tibia crest and posterior to the midline.

24. The natural foot orthosis for providing support for a lower 15 extremity as defined in claim 15, wherein said additional thermoformable plastic material is centered on a longitudinal arch on said support structure and extends below the malleoli posterior above tendon and curves centered proximal over an edge of said support structure.

25. The natural foot orthosis for providing support for a lower 20 extremity as defined in claim 15, wherein said additional thermoformable

plastic material is centered on a longitudinal arch on said support structure and extends below the malleoli posterior above tendon and further extends past proximal mid line lateral to within approximately 1 inch of tibia crest and then curves upward with medial centering in a medial proximal calf band concavity.

26. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein said additional thermoformable plastic material is centered on a longitudinal arch on said support structure and extends below the malleoli posterior above tendon and further extends proximal to mid line medial to within approximately 1 inch of tibia crest and then curves upward with lateral centering in a lateral calf band concavity.

27. The natural foot orthosis for providing support for a lower extremity as defined in claim 15, wherein said support structure and said reinforced areas are formed by injecting thermoformable plastic material into a modified mold of the lower extremity.

28. A method of forming a natural foot orthosis for providing support for a lower extremity, comprising the steps of:  
forming a mold of said lower extremity having predetermined reinforcement locations formed in said mold for providing increased support for the natural foot orthosis at said predetermined locations;

injecting thermoformable plastic material into said mold for forming  
said natural foot orthosis.

29. The method of forming a natural foot orthosis for providing  
support for a lower extremity as defined in claim 28, wherein said  
5 thermoformable plastic material is formed from a co-polymer having a ratio  
of approximately 90-10 polypropylene to polyethylene.

30. The method of forming a natural foot orthosis for providing  
support for a lower extremity as defined in claim 28, wherein said  
thermoformable plastic material is formed from a co-polymer having a ratio  
10 of approximately 93-7 polypropylene to polyethylene.

31. The method of forming a natural foot orthosis for providing  
support for a lower extremity as defined in claim 28, wherein said mold is  
modified by providing approximately a 3/16" recess in said mold over a  
medial malleoli section of the mold to form one of said reinforcing areas to  
15 assist in controlling drop foot.

32. The method of forming a natural foot orthosis for providing  
support for a lower extremity as defined in claim 28, wherein said mold is  
modified in three areas in order to create three pressure points acting on the  
lower extremity.

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33. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 31, wherein said three pressure points are at a first point below the medial malleoli, at a second point approximately 2" above the lateral malleoli and approximately 3" below the fibula head anterior to within approximately 1" of the tibia crest and posterior to the midline, and at a third point approximately 1.5" distal to the fibula head approximately 2" wide anterior to within approximately 1" of tibia crest posterior to midline.

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34. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 32, wherein said three pressure points are at a first point below the lateral malleoli, at a second point approximately 2" above the medial malleoli and approximately 3" below the fibula head anterior to within approximately 1" of the tibia crest and posterior to the midline, and at a third point approximately 1.5" distal to the fibula head level approximately 2" wide anterior to within approximately 1" of tibia crest posterior to midline.

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35. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 28, wherein said reinforced location is centered on a longitudinal arch on said mold and extended below the malleoli posterior above tendon and curved centered proximal over an edge of said mold.

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36. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 28, wherein said reinforcement location is centered on a longitudinal arch on said mold and extended below the malleoli posterior above tendon and further extended past 5 proximal mid line lateral to within approximately 1 inch of tibia crest and then curved upward with medial centering in medial proximal calf band concavity.

37. The method of forming a natural foot orthosis for providing support for a lower extremity as defined in claim 28, wherein said reinforcement location is centered on a longitudinal arch on said mold and 10 extended below the malleoli posterior above tendon and further extended proximal to mid line medial to within approximately 1 inch of tibia crest and then curved upward with lateral centering in lateral calf band concavity.

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